Complete Summary

GUIDELINE TITLE

Use of epoetin and darbepoetin in patients with cancer: 2007 American Society of Clinical Oncology/American Society of Hematology clinical practice guideline update.

BIBLIOGRAPHIC SOURCE(S)

Rizzo JD, Somerfield MR, Hagerty KL, Seidenfeld J, Bohlius J, Bennett CL, Cella DF, Djulbegovic B, Goode MJ, Jakubowski AA, Rarick MU, Regan DH, Lichtin AE. Use of epoetin and darbepoetin in patients with cancer: 2007 American Society of Clinical Oncology/American Society of Hematology 2007 clinical practice guideline update. J Clin Oncol 2008 Jan 1;26(1):132-49. [39 references] PubMed

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Rizzo JD, Lichtin AE, Woolf SH, Seidenfeld J, Bennett CL, Cella D, Djulbegovic B, Goode MJ, Jakubowski AA, Lee SJ, Miller CB, Rarick MU, Regan DH, Browman GP, Gordon MS; American Society of Clinical Oncology; American Society of Hematology. Blood 2002 Oct 1;100(7):2303-20. PubMed

Rizzo JD, Lichtin AE, Woolf SH, Seidenfeld J, Bennett CL, Cella D, Djulbegovic B, Goode MJ, Jakubowski AA, Lee SJ, Miller CB, Rarick MU, Regan DH, Browman GP, Gordon MS; American Society of Clinical Oncology. American Society of Hematology. J Clin Oncol 2002 Oct 1;20(19):4083-107. PubMed

** REGULATORY ALERT **

FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- July 31, 2008, Erythropoiesis Stimulating Agents (ESAs): Amgen and the U.S. Food and Drug Administration (FDA) informed healthcare professionals of modifications to certain sections of the Boxed Warnings, Indications and Usage, and Dosage and Administration sections of prescribing information for Erythropoiesis Stimulating Agents (ESAs). The changes clarify the FDA-approved conditions for use of ESAs in patients with cancer and revise directions for dosing to state the hemoglobin level at which treatment with an ESA should be initiated.

- November 8, 2007 and January 3, 2008 Update, Erythropoiesis Stimulating Agents (ESAs): The U.S. Food and Drug Administration (FDA) notified healthcare professionals of revised boxed warnings and other safety-related product labeling changes for erythropoiesis-stimulating agents (ESAs) stating serious adverse events, such as tumor growth and shortened survival in patients with advanced cancer and chronic kidney failure.

COMPLETE SUMMARY CONTENT

** REGULATORY ALERT **
SCOPE
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INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES
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SCOPE

DISEASE/CONDITION(S)

- Chemotherapy-associated anemia
- Anemia associated with low-risk myelodysplastic syndrome (MDS)

GUIDELINE CATEGORY

Assessment of Therapeutic Effectiveness
Evaluation
Management
Treatment

CLINICAL SPECIALTY

Hematology
Oncology

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

- To update the 2002 American Society of Clinical Oncology/American Society of Hematology (ASCO/ASH) recommendations for the use of epoetin
- To expand the guideline to include recommendations for the use of darbepoetin alfa

- To address thromboembolic risk associated with epoetin and darbepoetin

TARGET POPULATION

Patients with chemotherapy-associated anemia or anemia associated with low-risk myelodysplastic syndrome (MDS)

INTERVENTIONS AND PRACTICES CONSIDERED

1. History and physical to identify causes of anemia, including drug exposure history; peripheral blood smear; iron, folate, and B_{12} deficiency; assessment for occult blood loss and renal insufficiency; Coomb's testing; and endogenous erythropoietin levels
2. Erythropoiesis-stimulating agents (ESAs): epoetin or darbepoetin treatment
3. Monitoring of hemoglobin levels
4. Red blood cell transfusion alone or as supplement to epoetin or darbepoetin treatment
5. Baseline and periodic monitoring of iron, total iron-binding capacity, transferrin saturation, or ferritin levels
6. Assessment of thromboembolic risk in patients prescribed epoetin or darbepoetin

MAJOR OUTCOMES CONSIDERED

- Hematologic response rates
- Transfusion rates
- Thromboembolic event rates
- Survival
- Quality of life

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

For the 2007 update, the American Society of Clinical Oncology/American Society of Hematology (ASCO/ASH) Update Committee completed a review and analysis of data published since 2002. The Update Committee's literature review focused attention on available systematic reviews and meta-analyses of published clinical trials. Computerized literature searches of MEDLINE and the Cochrane Collaboration Library were performed. Searches of the English-language literature from 2002 to July 2007 were conducted to address each of the original guideline questions and two new questions concerning, respectively, the comparative effectiveness of epoetin and darbepoetin, and thrombosis risk of erythropoietin stimulating agents (ESAs). Relevant practice guidelines from other oncology and

national organizations were identified through a search of Medline and of the National Guideline Clearinghouse Web site.

Literature Search

Five comprehensive systematic reviews and meta-analyses of randomized controlled trials served as the primary evidentiary basis for this update. Supplementary searches of the Medline database (National Library of Medicine, Bethesda, MD) were conducted to identify relevant information (2003 to 2007) from additional published randomized clinical trials, systematic reviews, meta-analyses, and practice guidelines for this update. A series of searches was conducted using the medical subject headings or text words "erythropoietin, recombinant," "epoetin alfa," "epoetin beta," "darbepoetin alfa," and "neoplasms," and variants thereof. (Details of the searches can be obtained from guidelines@asco.org on request.) Search results were limited to human studies and English-language articles. Editorials, letters, and commentaries were excluded from consideration, as were systematic reviews and meta-analyses that were limited to single agents given the U.S. Food and Drug Administration's position that available ESAs are members of the same pharmacologic class. The Cochrane Library was searched for available systematic reviews and meta-analyses with the phrases, "erythropoietin," "epoetin," "darbepoetin," "cancer," and "malignancies." Directed searches based on the bibliographies of primary articles were also performed. Finally, Update Committee members and ASCO staff contributed articles from their personal collections.

NUMBER OF SOURCE DOCUMENTS

Five systematic reviews served as the primary evidence base for the guideline update.

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Expert Consensus (Committee)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The Update Committee had a single face-to-face meeting to consider the evidence for each of the 2007 recommendations. Additional meetings were held via teleconference.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The guideline was circulated in draft form to the Update Committee, the American Society of Clinical Oncology's (ASCO's) Health Services Committee, the American Society of Hematology's (ASH's) Committee on Practice, ASH's Subcommittee on Quality of Care, and the ASCO Board of Directors and the ASH Executive Committee for review and approval. The ASCO Board of Directors approved this guideline on August 15, 2007, and the Executive Committee of ASH approved it on August 14, 2007.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Note: Differences between the 2002 and 2007 guideline recommendations appear in italicized text.

I. General Recommendation

2007 Recommendation

As in any medical situation, it is essential to consider other correctable causes of anemia before initiating therapy with stimulants of erythropoiesis. Therefore, it is advisable to conduct an appropriate history and physical, and to consider relevant diagnostic testing aimed at identifying causes of anemia aside from chemotherapy or underlying hematopoietic malignancy. At a minimum, one should take a thorough drug exposure history, carefully review the peripheral blood smear (and in some cases, the bone marrow), consider iron, folate, and B_{12} deficiency where indicated, and assess for occult blood loss *and renal insufficiency*. Coomb's testing

may be appropriate for patients with chronic lymphocytic leukemia, *non-Hodgkin's lymphoma*, *and for those with a history of autoimmune disease*; endogenous erythropoietin levels may predict response in patients with myelodysplasia. *Consideration should be given to minimize use of erythropoiesis-stimulating agents (ESAs) in patients with high risk of thromboembolic events, as further discussed in Recommendation IV (below)*.

II. Special Commentary on the Comparative Effectiveness of Epoetin and Darbepoetin (Note: This Topic in New to the Guideline)

2007 Update Committee Statement

Based on a comprehensive systematic review comparing outcomes of epoetin and darbepoetin in patients with chemotherapy induced anemia; and on identical cancer-related indications, warnings, and cautions in the relevant U.S. Food and Drug Administration–approved package inserts, the Update Committee considers these agents to be equivalent with respect to effectiveness and safety.

IIIa. Chemotherapy-Induced Anemia: Threshold for Initiating ESA Therapy (Hemoglobin [Hb] Concentration Approaching or <10 g/dL)

2007 Recommendation

The use of epoetin *or darbepoetin* is recommended as a treatment option for patients with chemotherapy-associated anemia and a Hb concentration *that is approaching, or has fallen below,* 10 g/dL, *to increase Hb and decrease transfusions*. Red blood cell (RBC) transfusion is also an option depending on the severity of the anemia or clinical circumstances.

IIIb. Chemotherapy-Induced Anemia: Initiation Threshold >10 g/dL BUT < 12 g/dL

2007 Recommendation

For patients with declining Hb levels but less severe anemia (those with Hb concentration <12 g/dL, but who have never fallen *near* 10 g/dL), the decision of whether to use epoetin *or darbepoetin* immediately or to wait until the Hb levels fall closer to 10 g/dL should be determined by clinical circumstances (*including but not limited to elderly individuals with limited cardiopulmonary reserve, those with underlying coronary artery disease or symptomatic angina, or substantially reduced exercise capacity, energy, or ability to carry out activities of daily living [ADLs*]). RBC transfusion is also an option when warranted by clinical conditions.

IV. Thromboembolic Risk (Note. This Topic is New to the Guideline)

2007 Recommendation

Clinicians should carefully weigh the risks of thromboembolism in patients for whom epoetin or darbepoetin is prescribed. Randomized clinical trials and systematic reviews of available randomized clinical trials demonstrate an increased risk of thromboembolism in patients receiving epoetin or darbepoetin.

Specific risk factors for thromboembolism have not been defined in these trials; therefore, clinicians should use caution and clinical judgment when considering use of these agents. Established, general risk factors for thromboembolic events include previous history of thromboses, surgery, and prolonged periods of immobilization or limited activity. Multiple myeloma patients who are being treated with thalidomide or lenalidomide and doxorubicin or corticosteroids are at increased risk (Bennett et al., 2006). There are no data regarding concomitant use of anticoagulants or aspirin to modulate this risk.

V. Starting and Escalating Doses

2007 Recommendation

The U.S. Food and Drug Administration-approved starting dose of epoetin is 150 U/kg *three times per week or 40,000 U weekly subcutaneously. The U.S. Food and Drug Administration–approved starting dose of darbepoetin is 2.25 micrograms/kg weekly or 500 micrograms every 3 weeks subcutaneously. Alternative starting doses or dosing schedules have shown no consistent difference in effectiveness on outcomes including transfusion and Hb response, although they may be considered to improve convenience. Dose escalation should follow U.S. Food and Drug Administration–approved labeling (see table below); no convincing evidence exists to suggest that differences in dose escalation schedules are associated with different effectiveness*.

Table. Erythropoiesis-Stimulating Agent (ESA) Dosing

Dose and Modifications	Epoetin Alfa		Darbepoetin Alfa	
Initial dose	150 U/kg SC TIW	40,000 U SC weekly	2.25 micrograms/ kg SC weekly	500 micrograms SC Q3W
Dose increase	Increase dose to 300 U/kg TIW if no reduction in transfusion requirements or rise in Hb after 8 wk	Increase dose to 60,000 U SC weekly if no increase in Hb by ≥1 g/dL after 4 wk of therapy, in the absence of a RBC transfusion	Increase dose to 4.5 micrograms/ kg if there is <1 g/dL increase in Hb after 6 wk	---
Dose reductions	Decrease dose by 25% when Hb reaches a level needed to avoid		Decrease dose by 40% of previous dose when Hb	

Table. Erythropoiesis-Stimulating Agent (ESA) Dosing		
Dose and Modifications	**Epoetin Alfa**	**Darbepoetin Alfa**
	transfusion or Hb increases >1 g/dL in 2 wk	reaches a level needed to avoid transfusion or Hb increases >1 g/dL in 2 wk
Dose withholding	If Hb exceeds 12 g/dL, withhold dose until Hb approaches a level where transfusions may be required; restart dose at 25% below previous dose	If Hb exceeds 12 g/dL, withhold dose until Hb approaches a level where transfusions may be required; restart dose at 40% below previous dose
Abbreviations: ESA, erythropoiesis-stimulating agent; SC, subcutaneous; TIW, three times per week; Q3W, every 3 weeks; Hb, hemoglobin; wk, week; RBC, red blood cell		

VI. Discontinuing Therapy for No Response

2007 Recommendation

Continuing epoetin or darbepoetin treatment beyond 6 to 8 weeks in the absence of response (e.g., <1-2 g/dL rise in Hb or *no diminution of transfusion requirements*), assuming appropriate dose increase has been attempted in nonresponders *as per the U.S. Food and Drug Administration–approved label*, does not appear to be beneficial, *and ESA therapy should be discontinued*. Patients who do not respond should be investigated for underlying tumor progression, iron deficiency, *or other etiologies for anemia*.

VII. Hb Target

2007 Recommendation

Hb can be raised to (or near) a concentration of 12 g/dL, at which time the dosage of epoetin or darbepoetin should be titrated to maintain that level. *Dose and dose modification recommendations recorded in the package insert as of March 2007 and approved by the U.S. Food and Drug Administration (also based on the November 8, 2007, FDA label announcement) can be found in the table above. Dose reductions are also recommended when Hb rise exceeds 1 g/dL in any 2 week period or when the Hb exceeds 11 g d/L. Risk of venous thromboembolism should also be considered when determining dose reduction schedules*.

VIII. Iron Monitoring and Supplementation

2007 Recommendation

Baseline and periodic monitoring of iron, total iron-binding capacity, transferrin saturation, or ferritin levels and instituting iron repletion when indicated, may be valuable in limiting the need for epoetin or darbepoetin, maximizing symptomatic improvement for patients, and determining the reason for failure to respond adequately to ESA therapy. There is inadequate evidence to specify the timing, periodicity, or testing regimen for such monitoring. There is no change to the recommendation from the 2002 guideline.

IX. Anemia in Patients Not Receiving Concurrent Chemotherapy

2007 Recommendation

There is evidence that supports the use of epoetin or *darbepoetin* in patients with anemia associated with low-risk myelodysplasia. There are no published high-quality studies to support its *exclusive* use in anemic myeloma, non-Hodgkin's lymphoma, or chronic lymphocytic leukemia patients in the absence of concurrent chemotherapy. *Analyses of primary data from Study 20010103 (as yet unpublished) submitted to the U.S. Food and Drug Administration in March 2007, support a stronger recommendation against the use of ESAs to treat anemia associated with malignancy, or the anemia of cancer, among patients with either solid or nonmyeloid hematological malignancies who are not receiving concurrent chemotherapy. This recommendation is consistent with the black-box warning that was added to the prescribing information for both epoetin alfa and darbepoetin in March 2007, as follows: "Use of ESAs increased the risk of death when administered to a target Hb of 12 g/dL in patients with active malignant disease receiving neither chemotherapy nor radiation therapy. ESAs are not indicated in this population*."

X. Treatment of Anemia in Patients with Nonmyeloid Hematological Malignancies Who Are Receiving Concurrent Chemotherapy

2007 Recommendation

Physicians caring for patients with myeloma, non-Hodgkin's lymphoma, or chronic lymphocytic leukemia are advised to begin treatment with chemotherapy and/or corticosteroids and observe the hematologic outcomes achieved solely through tumor reduction before considering epoetin. If a rise in Hb is not observed following chemotherapy, treatment with epoetin *or darbepoetin for myeloma, non-Hodgkin's lymphoma, or chronic lymphocytic leukemia patients experiencing chemotherapy-associated anemia should follow the recommendations outlined previously. Particular caution should be exercised in the use of epoetin or darbepoetin concomitant with chemotherapeutic agents and diseases where risk of thromboembolic complications is increased. (Refer to Recommendation IV.)* Blood transfusion is also a therapeutic option. This recommendation is essentially unchanged from the 2002 guideline. Slight modifications to the recommendation appear in italics.

CLINICAL ALGORITHM(S)

An algorithm for the use of epoetin and darbepoetin in patients with cancer is provided as a companion document (see "Availability of Companion Documents" field in this summary).

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The updated recommendations are supported primarily by five comprehensive systematic reviews and meta-analyses of randomized clinical trials.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Appropriate use of epoetin and darbepoetin in cancer patients with chemotherapy-associated anemia and patients with anemia associated with low-risk myelodysplasia
- Increased hemoglobin (Hb) levels
- Decreased transfusions

POTENTIAL HARMS

Adverse Events Associated with Treatment

- Randomized clinical trials and systematic reviews of available randomized clinical trials demonstrate an increased risk of thromboembolism in patients receiving epoetin or darbepoetin. Specific risk factors for thromboembolism have not been defined in these trials; therefore, clinicians should use caution and clinical judgment when considering use of these agents. Established, general risk factors for thromboembolic events include previous history of thromboses, surgery, and prolonged periods of immobilization or limited activity. Multiple myeloma patients who are being treated with thalidomide or lenalidomide and doxorubicin or corticosteroids are at increased risk. There are no data regarding concomitant use of anticoagulants or aspirin to modulate this risk.
- The U.S. Food and Drug Administration (FDA) announced revisions to erythropoiesis-stimulating agent (ESA) product labels on November 8, 2007. These revisions warn that data are not sufficient to exclude the possibility of shortened survival and tumor progression in cancer patients when ESAs are dosed to reach a hemoglobin (Hb) level between 10 and 12 g/dL. Clinicians are advised to consider this warning, as discussed in sections IIIB and XI of the Major Recommendations Field.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

It is important to emphasize that guidelines and technology assessments cannot always account for individual variation among patients. They are not intended to supplant physician judgment with respect to particular patients or special clinical situations, and cannot be considered inclusive of all proper methods of care or exclusive of other treatments reasonably directed at obtaining the same result. Accordingly, the American Society of Clinical Oncology (ASCO) and the American Society of Hematology (ASH) consider adherence to this guideline to be voluntary, with the ultimate determination regarding its application to be made by the physician in light of each patient's individual circumstances. In addition, this guideline describes the use of procedures and therapies in clinical practice; it cannot be assumed to apply to the use of these interventions performed in the context of clinical trials, given that clinical studies are designed to evaluate or validate innovative approaches in a condition for which improved staging and treatment is needed.

Special Commentary on Erythropoiesis-Stimulating Agents (ESAS), Survival, and Tumor Response

Since publication of the 2002 guideline, a number of published studies on ESAs in cancer patients have raised safety concerns. Additional studies have completed accrual or were terminated prematurely and do not have complete data available. Much of the non–peer-reviewed data in the public domain comes from briefing documents made available in conjunction with U.S. Food and Drug Administration Oncologic Drug Advisory Committee (ODAC) meetings in 2004 and 2007.Those studies, both published and unpublished, that showed a detrimental effect on survival or tumor response are discussed further in the original guideline document.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Chart Documentation/Checklists/Forms
Clinical Algorithm
Patient Resources
Personal Digital Assistant (PDA) Downloads
Quick Reference Guides/Physician Guides
Slide Presentation

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness
Patient-centeredness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Rizzo JD, Somerfield MR, Hagerty KL, Seidenfeld J, Bohlius J, Bennett CL, Cella DF, Djulbegovic B, Goode MJ, Jakubowski AA, Rarick MU, Regan DH, Lichtin AE. Use of epoetin and darbepoetin in patients with cancer: 2007 American Society of Clinical Oncology/American Society of Hematology 2007 clinical practice guideline update. J Clin Oncol 2008 Jan 1;26(1):132-49. [39 references] PubMed

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2002 Apr 18 (revised 2008 Jan 1)

GUIDELINE DEVELOPER(S)

American Society of Clinical Oncology - Medical Specialty Society
American Society of Hematology - Medical Specialty Society

SOURCE(S) OF FUNDING

American Society of Clinical Oncology
American Society of Hematology

GUIDELINE COMMITTEE

2007 ASCO/ASH Epoetin and Darbepoetin Update Panel

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Note: Although all authors completed the disclosure declaration, the following author(s) indicated a financial or other interest that is relevant to the subject matter under consideration in this article. Certain relationships marked with a "U" are those for which no compensation was received; those relationships marked with a "C" were compensated. For a detailed description of the disclosure categories, or for more information about ASCO's conflict of interest policy, please refer to the Author Disclosure Declaration and the Disclosures of Potential Conflicts of Interest section in Information for Contributors in the original journal of publication.

Employment or Leadership Position: None **Consultant or Advisory Role**: Charles L. Bennett, Amgen (C); Benjamin Djulbegovic, Amgen (C); Alan E. Lichtin, Amgen (Advisory Board Meeting) (U) **Stock Ownership**: None **Honoraria**: Julia Bohlius, Amgen; Charles L. Bennett, Amgen **Research Funding**: Charles L. Bennett, Amgen; David F. Cella, Amgen, Johnson and Johnson; Benjamin Djulbegovic, Johnson and Johnson; Alan E. Lichtin, Amgen **Expert Testimony**: None **Other Remuneration**: Julia Bohlius, Amgen

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Rizzo JD, Lichtin AE, Woolf SH, Seidenfeld J, Bennett CL, Cella D, Djulbegovic B, Goode MJ, Jakubowski AA, Lee SJ, Miller CB, Rarick MU, Regan DH, Browman GP, Gordon MS; American Society of Clinical Oncology; American Society of Hematology. Blood 2002 Oct 1;100(7):2303-20. PubMed

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GUIDELINE AVAILABILITY

Electronic copies: Available from the American Society of Clinical Oncology and the American Society of Hematology (ASH) Web site.

Print copies: Available from American Society of Clinical Oncology (ASCO), Cancer Policy and Clinical Affairs, 1900 Duke Street, Suite 200, Alexandria, VA 22314.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Erythropoiesis stimulating agent order and flow sheet. 1 p. Available in Portable Document Format (PDF) from the American Society of Clinical Oncology (ASCO) Web site.
- ASCO/ASH 2007 clinical practice guideline update on the use of epoetin and darbepoetin. Algorithm. 1 p. Available in Portable Document Format (PDF) from the American Society of Clinical Oncology (ASCO) Web site.
- 2007 update table of the ASCO/ASH guideline on the use of epoetin and darbepoetin. 2007. 4 p. Electronic copies: Available in Portable Document Format (PDF) from the American Society of Clinical Oncology (ASCO) Web site.
- 2007 clinical practice guideline update on the use of epoetin and darbepoetin. Slide set. 2007. 27 p. Electronic copies: Available in Portable Document Format (PDF) and Power Point from the American Society of Clinical Oncology (ASCO) Web site.
- 2007 clinical practice guideline update on the use of epoetin and darbepoetin. Guideline summary. Electronic copies: Available in Portable Document Format (PDF) from the American Society of Clinical Oncology (ASCO) Web site.
- 2007 clinical practice guideline update on the use of epoetin and darbepoetin. Quick reference guide. 2007 Dec. 2 p. Electronic copies: Available in Portable Document Format (PDF) from the American Society of Hematology Web site.

Guidelines are available for Personal Digital Assistant (PDA) download from the ASCO Web site.

PATIENT RESOURCES

The following is available:

- ASCO patient guide: epoetin and darbepoetin treatment. 2007 Oct. 3 p. Available from the Cancer.Net Web site.

NGC STATUS

This NGC summary was completed by ECRI on May 16, 2003. The information was verified by the guideline developer on June 25, 2003. This summary was updated by ECRI on January 29, 2007, following the U.S. Food and Drug Administration advisory on erythropoiesis stimulating agents. This summary was updated by ECRI Institute on July 9, 2007, following the FDA advisory on erythropoiesis stimulating agents. This NGC summary was updated by ECRI Institute on February 19, 2008. The updated information was verified by the guideline developer on February 20, 2008. This summary was updated by ECRI Institute on August 15, 2008 following the U.S. Food and Drug Administration advisory on Erythropoiesis Stimulating Agents (ESAs).

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